

What is claimed is:

- 1 1. A power supply system, comprising:
2 a first voltage source having a first output at a first voltage;
3 a second voltage source having a second output at a second voltage
4 approximately equal to the first voltage; and
5 a circuit element having a plurality of power connection terminals and a
6 plurality of return connection terminals, wherein a first portion of the plurality of
7 power connection terminals and a first portion of the plurality of return connection
8 terminals are connected to the first output, and wherein a second portion of the
9 plurality of power connection terminals and a second portion of the plurality of
10 return connection terminals are connected to the second output.
- 1 2. The power supply system of claim 1, wherein the first and second voltage
2 sources are included in a single voltage regulator.
- 1 3. The power supply system of claim 1, wherein the first voltage source is
2 included in a first voltage regulator and the second voltage source is included in a
3 second voltage regulator.
- 1 4. The power supply system of claim 3, wherein the first output includes a first
2 phase and the second output includes a second phase, further comprising:
3 a phase synchronizing connection between the first and second voltage
4 regulators.
- 1 5. The power supply system of claim 1, wherein the circuit element is a
2 microprocessor.
- 1 6. The power supply system of claim 1, wherein the circuit element is a socket.

1 7. The power supply system of claim 1, further comprising:
2 a third voltage source having a third output at a third voltage approximately
3 equal to the first voltage, wherein a third portion of the plurality of power
4 connection terminals and a third portion of the plurality of return connection
5 terminals are connected to the third output.

1 8. The power supply system of claim 7, further comprising:
2 a fourth voltage source having a fourth output at a fourth voltage
3 approximately equal to the first voltage, wherein a fourth portion of the plurality of
4 power connection terminals and a fourth portion of the plurality of return connection
5 terminals are connected to the fourth output.

1 9. The power supply system of claim 8, wherein the first output includes a first
2 phase, the second output includes a second phase, the third output includes a third
3 phase, and the fourth output includes a fourth phase, further comprising:
4 a phase synchronizing connection between the first, second, third, and fourth
5 voltage sources.

1 10. The power supply system of claim 1, wherein the first portion of the
2 plurality of power connection terminals is equal to the first portion of the plurality
3 of return connection terminals, and wherein the second portion of the plurality of
4 power connection terminals is equal to the second portion of the plurality of return
5 connection terminals.

1 11. A circuit board, comprising:
2 a circuit card;
3 a first voltage source attached to the circuit card and having a first output at
4 a first voltage;
5 a second voltage source attached to the circuit card and having a second
6 output at a second voltage approximately equal to the first voltage; and

7 a circuit element attached to the circuit card and having a plurality of power
8 connection terminals and a plurality of return connection terminals, wherein a first
9 portion of the plurality of power connection terminals and a first portion of the
10 plurality of return connection terminals are connected to the first output using a first
11 plurality of traces on the circuit card, and wherein a second portion of the plurality
12 of power connection terminals and a second portion of the plurality of return
13 connection terminals are connected to the second output using a second plurality of
14 traces on the circuit card.

1 12. The circuit board of claim 11, wherein the circuit element is a
2 microprocessor.

1 13. The circuit board of claim 11, wherein the circuit element is a socket.

1 14. The circuit board of claim 11, wherein the first and second voltage sources
2 are included in a single voltage regulator.

1 15. The circuit board of claim 11, wherein the first voltage source is included in
2 a first voltage regulator and the second voltage source is included in a second
3 voltage regulator.

1 16. The circuit board of claim 15, wherein the first output includes a first phase
2 and the second output includes a second phase, further comprising:
3 a phase synchronizing connection between the first and second voltage
4 regulators.

1 17. A computer, comprising:
2 a microprocessor mounted in a socket having a plurality of power
3 connection terminals and a plurality of return connection terminals;

4 a first voltage source having a first output at a first voltage connected to a
5 first portion of the plurality of power connection terminals and a first portion of the
6 plurality of return connection terminals; and
7 a second voltage source having a second output at a second voltage
8 approximately equal to the first voltage, wherein the second output is connected to a
9 second portion of the plurality of power connection terminals and a second portion
10 of the plurality of return connection terminals.

1 18. The computer of claim 17, wherein the first and second voltage sources are
2 included in a single voltage regulator.

1 19. The computer of claim 17, wherein the first voltage source is included in a
2 first voltage regulator and the second voltage source is included in a second voltage
3 regulator.

1 20. The computer of claim 19, wherein the first output includes a first phase and
2 the second output includes a second phase, further comprising:
3 a phase synchronizing connection between the first and second voltage
4 sources.

1 21. A method of providing power to a circuit element, comprising:
2 selecting a first portion of a plurality of power connection terminals
3 electrically coupled to the circuit element;
4 selecting a first portion of a plurality of return connection terminals
5 electrically coupled to the circuit element;
6 connecting a first output supplied at a first voltage of a first voltage source to
7 the first portions of the pluralities of power and return terminals;
8 selecting a second portion of the plurality of power connection terminals
9 electrically coupled to the circuit element;
10 selecting a second portion of the plurality of return connection terminals
11 electrically coupled to the circuit element; and

12 connecting a second output of a voltage source to the second portions of the
13 pluralities of power and return terminals, wherein the second output is supplied at a
14 second voltage approximately equal to the first voltage.

1 22. The method of claim 21, wherein the first and second phase outputs are
2 supplied by a single voltage regulator.

1 23. The method of claim 21, wherein the first output is supplied by a first
2 voltage regulator and the second output is supplied by a second voltage regulator.

1 24. The method of claim 23, wherein the first output includes a first phase and
2 the second output includes a second phase, further comprising:
3 inserting a phase synchronizing connection between the first and second
4 voltage regulators.

1 25. The method of claim 21, wherein the circuit element is a microprocessor.

1 26. The method of claim 21, wherein the circuit element is a socket.